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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/898,379	07/05/2001	George Kovar	10-342 US	3611

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LACASSE & ASSOCIATES, LLC  
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ALEXANDRIA, VA 22314

EXAMINER

TRAN, DZUNG D

ART UNIT	PAPER NUMBER
2633	

*[Handwritten mark]*

DATE MAILED: 06/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/898,379

Applicant(s)

KOVAR ET AL.

Examiner

Dzung D Tran

Art Unit

2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 July 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-17 and 19-22 is/are rejected.
- 7) ☒ Claim(s) 7 and 18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Specification***

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-6, 8-17 and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ross US patent no. 3,956,626 in view of Bergano et al. US patent no. 5,111,322.

Regarding claims 1, 16 and 19, Ross discloses an optical modulator for encoding data comprising:

means<sup>12</sup> for modifying a laser light beam to a pulse train at a first frequency (figures 1, 3, col. 8, lines 20-24);

a data modulator (14, 20, 24) for encoding signal data on the pulse train at a second data stream frequency where the second frequency is greater than to the first frequency (figures 1, 3, col. 5, line 67, col. 6, line 43, col. 8, line 23-28);

polarization beam splitter (18, 28, 36) for rotating a polarization state of at least alternate light pulses (p1 or p2 of figures 1, 2) of the pulse train to provide a data stream of polarized alternate light pulses (p1 or p2 of figures 1, 2 and col. 5, lines 15-27). Ross differs from claim 1 of the present invention in that he does not specifically disclose

the polarization beam splitter for rotating a polarization state of at least alternate light pulses of the pulse train to provide a data stream of orthogonal polarized alternate light pulses. Bergano discloses the polarization beam splitter 202 for rotating a polarization state of at least alternate light pulses of the pulse train to provide a data stream of orthogonal polarized alternate light pulses (col. 3, lines 19-23). At the time of the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the orthogonal polarization rotating taught by Bergano in the system of Ross. One of ordinary skill in the art would have been motivated to do this since the orthogonal polarization method of Bergano is allowing multiple signals occupying the same bandwidth to be transmitted simultaneously without interfering with one another, it also increases the data rate of the optical signal.

Regarding claim 2, Ross discloses mode-locked laser 12 (same as CW laser and pulse generator to produce a pulse train. See specification page 2, paragraph 21).

Regarding claim 3, whether the pulse generator produces pulses at 500 MHz or 1 GHz or 40 GHz is obviously an engineer design choice. Furthermore, the 40GHz pulse generator is well known in the art (see Evan et al. US patent no. 6,449,408).

Regarding claims 4 and 12, Ross discloses rotating a polarization state including the polarization separator 18 for directing alternate light pulses to a first optical path (the path connected to modulator 20) and a second optical path (the path connected to modulator 24) respectively (figure 2), one of the first optical path and the second optical path including a polarization rotator (18 of figure 1 and figure 2A) for changing the

polarization of light pulses passing therethrough (col. 5, lines 14-28), and means 32 for combining polarized light pulses from the first and second optical paths into a single data stream of alternate polarized light pulses (col. 5, lines 38-40).

Regarding claims 5 and 14, Ross further discloses a driver (60, 62, 64 of figure 2) electrically coupled to the pulse generator for synchronizing the means for directing alternate pulses to the frequency of the pulse train.

Regarding claims 6 and 15, Bergano discloses the modulator is a Mach-Zehnder modulator (col. 3, lines 33-36).

Regarding claim 8, Ross discloses the means for rotating (28, 36) a polarization state is disposed after the single data modulator (20, 24) in a light propagating direction (figure 2).

Regarding claims 9, 10, 11 and 22, Ross further discloses the second frequency is greater and equal to twice the frequency of the first frequency (figure 3, col. 5, line 67, col. 6, line 43).

Regarding claim 13, Ross further discloses the rotating (18 of figure 1) a polarization state precedes the data modulator (20, 24 of figure 1) in a light propagating direction.

Regarding claim 17, Bergano further discloses the polarization splitter 202 of figure 2 for directing the light from a first modulator 201 to the second modulators 205, 206.

Regarding claim 20, Ross further discloses pulses through a polarization rotator (quarter wave plate of figure 2A) comprises passing alternate pulses, in dependence

upon a clock synchronized with the pulse train (p1 or p2 of figures 1, 2), through a polarization rotator (figure 2)

Regarding claim 21, Bergano further discloses an output polarization signal comprise the interleaving alternate pulse from delay line 209 (same as polarization rotor) with alternate pulse which did not pass through the delay line 209 (same as polarization rotor).

3. Claims 7 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Yariv U.S. patent no. 6,219,172. Sampling and processing signals by using optical pulses

b. Hayee et al. U.S. patent no. 6,714,742. Polarization division multiplexing based on power encoding of different polarization channels

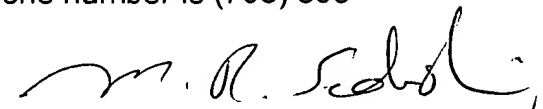
c. Ono U.S. patent no. 5,473,457. Method and apparatus for compensating dispersion of polarization

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dzung Tran whose telephone number is (703) 305-0932.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's Supervisor, Jason Chan, can be reached on (703) 305-4729.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

  
M.R. SEDIGHIAN  
Primary Examiner  
Art Unit: 2633